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ABSTRACT

Forty kindergarten children participated in a study to determine (1) whether significant relationships existed among children's scores on various word boundary tasks, (2) whether scores on the individual tasks were significantly related to the children's ability to represent phonemic segments in their spelling, and (3) whether different instructional approaches made a difference in children's recognition of word boundaries and phoneme segmentation ability. The children came from classes taught by two different teachers--one who used no specific reading instruction approach, and one who used a structured, synthetic phonics approach. Each child was given four word boundary tasks and a spelling test. The children's performance on the four tasks differed significantly across teachers. For students in the "no phonics" classes there were significant correlations among all four tasks; in addition, performance on each task was significantly related to the children's ability to represent phonemic segments in their spellings. (FL)

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Word Boundary Recognition
and Its Relationship to Phoneme Segmentation Ability

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In a recent dissertation, Morris (1980) introduced a "concept of word" task for the purpose of assessing first graders' knowledge of the spoken word/written word match in reading. In the task beginning readers committed a four-line spoken poem to memory, and then attempted to:

- 1) finger-point read a written copy of the poem line by line; and 2)

identify individual words within the written poem. It was found that performance on the concept of word task in the first month of school not only predicted later reading achievement, but also correlated highly ($r = .70$) with the children's awareness of phonemic segments within spoken words. Note: Two phoneme segmentation measures were used--

a structured phoneme segmentation test (Liberman et al., 1974), and a sample of the children's invented spellings.

Based on the concept of word - phoneme segmentation correlation, Morris suggested that a developing consciousness of word units within text may play an important facilitative role in making children aware of the phonemic (letter-sound) properties of individual words. That is, once beginning readers discover and are able to attend to word units within text, they should find it easier to focus on the sequenced phoneme relationships within these word units.

To test the existence of the relationship with another group of children, the present study was conducted with end-of-year kindergarteners. The study had three purposes: 1) To determine if significant relationships exist among kindergarteners' scores on various word boundary tasks --Talking/Tapping Game (Karpova, 1955); Printed Word Awareness task (Francis, 1972); Circle Game (Meltzer & Herse, 1969); and Concept of Word task (Morris, 1980). 2) To determine if scores on the individual word boundary tasks are significantly related to the kindergarteners' ability to represent phonemic segments in their spelling. 3) To determine the influence of different instructional programs on kindergarteners' recognition of word boundaries and phoneme segmentation ability.

Method

Subjects.

Forty (40) kindergarten children were selected from four classrooms taught by two different teachers.

	Teacher 1	Teacher 2
Morning Class	10	10
Afternoon Class	10	10

Each child selected for the study had scored at the 5th stanine or better on the pre-reading subtests of the Metropolitan Readiness Test (MRT), which had been administered in mid-May, approximately two weeks before the testing that will be reported in this article. (Mean score in Teacher 1's classes = 56; Mean score in Teacher 2's classes = 59.)

There were important differences in the reading instruction offered by the two kindergarten teachers during the school year. Teacher 1 had placed little emphasis on reading in her classes. Her children were taught the alphabet and the corresponding "sound" for each alphabet letter. Teacher 1 had not worked with book reading or even language-experience charts. Teacher 2 had emphasized reading in her classes, using a structured, synthetic phonics program (Lippincott) throughout the year. By the end of the year many of the children in Teacher 2's classes were able to blend individual sounds into words (/b/ /ae/ /t/ = /baet/), and in this manner, could read (decode) short three and four-word sentences in their Lippincott workbooks.

Procedures

Each child was tested in two sessions. In the first individual session (approx. 15 min.) four word boundary tasks were administered. In the second group session, a 12-word spelling test was administered to four children at a time.

Word boundary tasks. The test protocols for three of the word

boundary tasks were borrowed from Warren (1977). In the Talking/Tapping Game, the children listened to a spoken phrase and then were asked to repeat the phrase, tapping a plastic chip as they said each word in the phrase. In the Printed Word Awareness task, the children were shown a card divided into six squares. Two squares contained a single word, two contained a short sentence, and two contained a single letter. The children's task was "to point to a word that is all by itself in a space." In the Circle Game, the children were presented with printed sentences, six to nine words in length, and were asked to draw a circle around each of the words.

The fourth word boundary task was a modification of Morris' (1980) Concept of Word task. It will be described as an 8-step procedure:

1) Pretest (W. Rec. in Iso.): Child was asked to identify 8 isolated words that later appeared in a two-line poem. 2) Child learned the spoken poem to criterion of a perfect recitation of each line when cued with first word in the line. 3) Pretest (W. Rec. in Cxt.): Child was asked to identify 6 words in the following order; identity of the poem was not revealed.

1 6 4
Sam, Sam the baker man

5 3 2
Washed his face in a frying pan.

4) Pointing/W. Rec. within one line: Child was informed that words on the paper comprised the poem that he/she had just committed to memory. Examiner modeled an oral reading of the two lines, pointing to each word. Child was then cued with the first word in the first line and asked to finger-point read the line (score 1 pt. for perfect word-by-

word pointing). Next, Examiner pointed to two words within the first line (baker, the) and child was asked to identify them. The same procedure was repeated with the second line of the poem. 5) Examiner and child read the poem together with examiner pointing to each word. 6) Post-test (W. Rec. in Cxt.): Repeat Step 3. 7) Child finger-point read both lines one more time, and each line was scored for pointing accuracy. 8) Post-test (W. Rec. in Iso.): Repeat Step 1.

The Concept of Word task yielded a composite score which controlled for sight vocabulary or decoding ability that individual children brought to the task. Concept of Word score equaled W. Rec. in Iso. (Pre-Post Gain) + W. Rec. in Cxt. (Pre-Post Gain) + W. Rec. within one line (0 - 4) + Pointing (0 - 4).

Spelling Task. A sounding-out spelling strategy (rat = r - a - t) was modeled for the children, and then they were asked to spell the following twelve words: back, sink, mail, dress, lake, side, feet, stamp, bed, stick, bike, seed. The spelling of each word received a score of 0-5 based on its categorization in the following developmental sequence (see Beers & Henderson, 1977, for a comparable developmental spelling scheme): (0) no letter-sound relationships represented (back = EORIA); (1) beginning consonant represented (back = B; sink = SOAL); (2) beginning and ending consonants (back = BC; feet = FT; sink = SAEHK), or beginning consonant and appropriate vowel (lake = LAE; mail = MA); (3) phonetic or letter-name spelling (see Read, 1975) - beginning and ending consonants plus correct long vowel or appropriate short vowel substitution (mail = MAL; feet = FET; sink = SEK; dress = DRAS); (4) transitional - correct short vowel representation or misplaced vowel

marker on correct short or long vowel (dress = DRES; stick = STIK; lake = LAEK; seed = SEDE; stamp = STAMPE); (5) correct spelling.

A child's spelling score equaled the total number of points achieved on the twelve-word test.

Results

The kindergarteners' performance on the experimental tasks differed significantly across teachers. In Teacher 2's classes (phonics instruction), performance on the Concept of Word task was significantly related to performance on the Talking/Tapping Game ($r = .56$, $p .01$) and to performance on the Spelling task ($r = .39$, $p .05$). However, these were the only significant correlations. A very different pattern of results was found in Teacher 1's classes (no phonics instruction). Here, there were significant intercorrelations (see Table 1) among all four word boundary tasks; furthermore, performance on each word boundary task was significantly related to the children's ability to represent phonemic segments in their spellings.

Table 2 does show that the phonics group scored significantly higher on the Spelling task and the Circle Game task than did the no-phonics group.

Discussion

The finding that the phonics group scored significantly higher on the Spelling task and the Circle Game task is not surprising. Phonics instruction should aid children in their attempts to spell words. Also,

the fact that children in these phonics classes had been exposed to three and four-word sentences in their reading workbooks may have given them an advantage in the Circle Game, where the objective is to draw a circle around individual words in a line of text.

However, one should be cautious in assigning any overall superiority to the phonics group. An informal comparison of the two groups' (phonics, no-phonics) performance on the Concept of Word Task is revealing. Considering only the ten highest scorers on the MRT from each group, it was possible to match children who scored 4 or 5 on the 8-word Pretest (W. Rec. in Iso.) and 3 or 4 on the 6-word Pretest (W. Rec. in Cxt.). Mean scores on the post-tests showed that the no-phonics group (N = 5) outgained the phonics group (N = 7) by 1.9 words on the W. Rec. in Iso., and by 1.1 words on W. Rec. in Cxt.

The reason for these differences in words gained from reading the poem was readily apparent to the examiners who administered the task. The phonics-oriented children seemed unable or unwilling to use the context of the poem to assist in reading the undecodable words (e.g., baker, frying, face). Even after a successful word-by-word finger-point reading of a line of the poem, these children were often unsuccessful in identifying individual words within the line because they persevered in attempting to "sound out" each and every word. Their counterparts, however, in the no-phonics group, did not depend exclusively on a "sounding-out" strategy, but rather seemed to treat words as whole units within the text. When the examiner pointed to an individual word within the poem, these children often returned to the beginning of the line and proceeded to use a word-by-word contextual strategy to successfully

identify the target word. The differential effects of instruction on children's early reading strategies have been noted in the literature (Barr, 1972; DeLawter, 1975) and should continue to be of diagnostic interest to teachers of beginning reading.

An important finding in the present study bears at least tangentially on a current issue in beginning^{reading} research. The issue is phoneme segmentation ability and its relationship to reading achievement. Liberman (1973) and recently Clay (1979) have argued that children's awareness of phonemic segments within spoken words may be of critical importance in the learning to read process. And at least two studies (Morris, 1980; Zifcak, 1976) have shown that this phoneme segmentation ability is reflected in children's invented spellings.

The relevant finding in the present study is that in the traditional, no-phonics kindergarten classes, the children's performance on each of the written word boundary tasks was significantly related to their ability to represent phonemic segments in their spelling. More specifically, only 9 of the 20 children in the no-phonics group were able to represent one-half or more of the 12 spelling words at the "phonetic level" or better. (A phonetic spelling indicates that the child has appropriately perceived the beginning consonant, medial vowel, and ending consonant.) Eight of these nine children scored in the top 50% on the Concept of Word Task.

Only further experimental research can resolve the cause-and-effect nature of this word boundary/phoneme segmentation relationship. However, one can tentatively hypothesize that as children learn more about the boundaries of word units in written (and spoken) language, they will

be better able to attend to the sequential phonemic relationships within these word units.

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Table 1

Correlations Among the Tasks for Kindergarten
Students Not Exposed to Phonics Instruction

Variables	Metro	Con. of Wd.	Circle	PWA	T/Tap
Metro (MRT)					
Con. of Wd.	.72**				
Circle	.61**	.56**			
PWA	.72**	.76**	.58**		
T/Tap	.60**	.48*	.48*	.60**	
Spell	.65**	.50**	.39*	.73**	.66**

N = 20

* = .05

** = .01

Table 2

Analysis of Variance for Selected Reading Tasks
Given to Two Groups of Kindergarteners

Variable	Students Exposed to Phonics Instruction		Students Not Exposed to Phonics Instruction		F-value	Error Level
	Mean	SD	Mean	SD		
Circle	13.70	3.38	10.20	6.54	4.51	.04
PWA	2.50	2.76	2.70	2.79	.05	.82
T/Tap	39.05	3.87	37.95	4.07	.77	.38
Spell	33.80	12.81	23.30	16.02	5.23	.03